

I claim:

1. A wireless object counter comprising:

a transmitter circuit comprising:

a continuously cycling microcomputer;

a continuously operating clock circuit connected to said  
5 microcomputer;

an infrared generator producing a burst of a predetermined  
minimum number of infrared pulses as a beam during a  
predetermined time period;

and said microcomputer controlling said infrared generator

10 to produce a burst of the predetermined minimum number  
of infrared pulses as a beam during the predetermined  
time period;

a receiver circuit comprising:

a microcomputer;

15 a continuously operating clock circuit connected to said  
microcomputer, said clock circuit having the same

frequency as said clock circuit of said transmitter  
circuit and synchronized with said clock circuit of  
said transmitter circuit so that activations of said

20 microcomputer of said transmitter circuit and said  
microcomputer of said receiver circuit are synchronized  
when said microcomputer of said receiver circuit is to  
be activated for a cycle of operation;

an infrared receiver aligned with the beam of each of the

25 bursts of at least the predetermined minimum number of

infrared pulses for receiving the infrared pulses of  
each of the bursts of the infrared pulses, said  
infrared receiver being spaced from said infrared  
generator to provide a path therebetween along which  
30 objects to be counted move;  
said microcomputer rendering said infrared receiver  
effective a predetermined time period before each of  
the bursts of at least the predetermined minimum number  
of the infrared pulses is transmitted from said  
35 infrared generator when said microcomputer of said  
receiver circuit is activated for a cycle of operation;  
said infrared receiver communicating with said microcomputer  
if said infrared receiver receives the burst of at  
least the predetermined minimum number of the infrared  
40 pulses during a cycle of operation of said  
microcomputer;  
a counter in said microcomputer for counting each time that  
the beam of the pulses of each of the bursts of at  
least the predetermined minimum number of the infrared  
45 pulses is interrupted by an object to be counted;  
and said microcomputer ceasing to cycle for a predetermined  
period of time when said infrared receiver fails to  
receive one of the bursts of at least the predetermined  
minimum number of the infrared pulses for a  
50 predetermined number of cycles of operation of said  
microcomputer;

a first battery for powering said transmitter circuit;  
and a second battery for powering said receiver circuit.

2. The wireless object counter according to claim 1 comprising means for selecting one of at least two different power levels for energizing said infrared generator of said transmitter circuit.

3. The wireless object counter according to claim 2 in which each of the predetermined time periods of each cycle of operation of said microcomputer of said transmitter circuit in which at least the predetermined minimum number of the infrared pulses is produced is a constant.

4. The wireless object counter according to claim 3 in which said microcomputer of said receiver circuit is activated a predetermined time period before said microcomputer of said transmitter circuit is activated.

5. The wireless object counter according to claim 4 comprising means for energizing said infrared generator from said microcomputer of said transmitter circuit during each activation of said microcomputer of said transmitter circuit.

6. The wireless object counter according to claim 5 in which: said microcomputer of said receiver circuit is activated for at least one cycle of operation after ceasing to cycle for the predetermined period of time to determine if said infrared receiver receives one of the bursts of at least the predetermined minimum number of the infrared pulses during

the at least one cycle of operation that said microcomputer of said receiver circuit is activated;

said microcomputer of said receiver circuit ceasing to cycle

10 again for a predetermined period of time if said infrared receiver fails to receive one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer is activated;

15 and said microcomputer of said receiver circuit continuing to cycle if said infrared receiver receives one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer is activated until said infrared receiver  
20 fails to receive one of the bursts of the infrared pulses for a predetermined number of cycles of operation of said microcomputer of said receiver circuit.

7. The wireless object counter according to claim 6 comprising a display for displaying as a count of the number of objects counted only the first count of any plurality of successive counts received by said counter in said microcomputer of said  
5 receiver circuit until there is an interruption of the successive counts.

8. The wireless object counter according to claim 7 in which said infrared generator is a LED.

9. The wireless object counter according to claim 2 in which said microcomputer of said receiver circuit is activated a

predetermined time period before said microcomputer of said transmitter circuit is activated.

10. The wireless object counter according to claim 9 comprising means for energizing said infrared generator from said microcomputer of said transmitter circuit during each activation of said microcomputer of said transmitter circuit.

11. The wireless object counter according to claim 10 in which: said microcomputer of said receiver circuit is activated for at least one cycle of operation after ceasing to cycle for the predetermined period of time to determine if said infrared receiver receives one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer of said receiver circuit is activated;

said microcomputer of said receiver circuit ceasing to cycle again for a predetermined period of time if said infrared receiver fails to receive one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer is activated;

and said microcomputer of said receiver circuit continuing to cycle if said infrared receiver receives one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer is activated until said infrared receiver fails to receive one of the bursts of the infrared pulses

for a predetermined number of cycles of operation of said microcomputer of said receiver circuit.

12. The wireless object counter according to claim 11 comprising a display for displaying as a count of the number of objects counted only the first count of any plurality of successive counts received by said counter in said microcomputer of said receiver circuit until there is an interruption of the successive counts.

13. The wireless object counter according to claim 12 in which said infrared generator is a LED.

14. The wireless object counter according to claim 2 in which: said microcomputer of said receiver circuit is activated for at least one cycle of operation after ceasing to cycle for the predetermined period of time to determine if said infrared receiver receives one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer of said receiver circuit is activated;

said microcomputer of said receiver circuit ceasing to cycle again for a predetermined period of time if said infrared receiver fails to receive one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer is activated;

and said microcomputer of said receiver circuit continuing to cycle if said infrared receiver receives one of the bursts

of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer is activated until said infrared receiver fails to receive one of the bursts of the infrared pulses for a predetermined number of cycles of operation of said microcomputer of said receiver circuit.

20 15. The wireless object counter according to claim 1 in which said microcomputer of said receiver circuit is activated a predetermined time period before said microcomputer of said transmitter circuit is activated.

16. The wireless object counter according to claim 15 comprising means for energizing said infrared generator from said microcomputer of said transmitter circuit during each activation of said microcomputer of said transmitter circuit.

17. The wireless object counter according to claim 16 in which: said microcomputer of said receiver circuit is activated for at least one cycle of operation after ceasing to cycle for the predetermined period of time to determine if said infrared receiver receives one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer of said receiver circuit is activated;

5 said microcomputer of said receiver circuit ceasing to cycle again for a predetermined period of time if said infrared receiver fails to receive one of the bursts of at least the predetermined minimum number of the infrared pulses during

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the at least one cycle of operation that said microcomputer is activated;

15 and said microcomputer of said receiver circuit continuing to  
cycle if said infrared receiver receives one of the bursts  
of at least the predetermined minimum number of the infrared  
pulses during the at least one cycle of operation that said  
microcomputer is activated until said infrared receiver  
20 fails to receive one of the bursts of the infrared pulses  
for a predetermined number of cycles of operation of said  
microcomputer of said receiver circuit.

18. The wireless object counter according to claim 1 in which:  
said microcomputer of said receiver circuit is activated for at  
least one cycle of operation after ceasing to cycle for the  
predetermined period of time to determine if said infrared  
5 receiver receives one of the bursts of at least the  
predetermined minimum number of the infrared pulses during  
the at least one cycle of operation that said microcomputer  
of said receiver circuit is activated;

said microcomputer of said receiver circuit ceasing to cycle  
10 again for a predetermined period of time if said infrared  
receiver fails to receive one of the bursts of at least the  
predetermined minimum number of the infrared pulses during  
the at least one cycle of operation that said microcomputer  
is activated;

15 and said microcomputer of said receiver circuit continuing to  
cycle if said infrared receiver receives one of the bursts



of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer is activated until said infrared receiver fails to receive one of the bursts of the infrared pulses for a predetermined number of cycles of operation of said microcomputer of said receiver circuit.

19. The wireless object counter according to claim 1 in which each of the predetermined time periods of each cycle of operation of said microcomputer of said transmitter circuit in which at least the predetermined minimum number of the infrared pulses is produced is a constant.

20. The wireless object counter according to claim 1 comprising a display for displaying as a count of the number of objects counted only the first count of any plurality of successive counts received by said counter in said microcomputer of said receiver circuit until there is an interruption of the successive counts.

21. The wireless object counter according to claim 1 in which said infrared generator is a LED.

22. A method of wireless counting of objects moving along a predetermined path comprising:

transmitting a beam of at least a predetermined minimum number of infrared pulses, under control of a continuously cycling first battery powered microcomputer having a continuously operating clock circuit, across the predetermined path during each cycle of operation of the continuously cycling

first battery powered microcomputer so that the beam of at  
least the predetermined minimum number of infrared pulses  
10 will be blocked by an object moving along the predetermined  
path;  
receiving the beam of at least the predetermined minimum number  
of infrared pulses at an infrared receiver disposed on the  
opposite side of the predetermined path unless the beam of  
15 at least the predetermined minimum number of infrared pulses  
is blocked, the receiver being under the control of a second  
battery powered microcomputer having a continuously  
operating clock circuit of the same frequency as the clock  
circuit of the first battery powered microcomputer during  
20 each cycle of operation of the second battery powered  
microcomputer, and the receiver being activated by the  
second battery powered microcomputer prior to transmission  
of the beam of at least the predetermined minimum number of  
infrared pulses;  
25 counting each time that the receiver does not receive the beam of  
at least the predetermined minimum number of infrared pulses  
and storing each count in the second battery powered  
microcomputer;  
and synchronizing the second battery powered microcomputer with  
30 the first battery powered microcomputer each time that the  
second battery powered microcomputer is to be activated for  
a cycle of operation.

23. The method according to claim 22 comprising displaying a count of the number of objects by adding only a count of one to a count display irrespective of the number of consecutive cycles of operation of the second battery powered microcomputer that the infrared receiver does not receive the beam of at least the predetermined minimum number of infrared pulses.

24. A method of wireless counting of objects moving along a predetermined path comprising:

transmitting a beam of at least a predetermined minimum number of infrared pulses, under control of a continuously cycling first battery powered microcomputer having a continuously operating clock circuit, across the predetermined path during each cycle of operation of the continuously cycling first battery powered microcomputer so that the beam of at least the predetermined minimum number of infrared pulses will be blocked by an object moving along the predetermined path;

receiving the beam of at least the predetermined minimum number of infrared pulses at an infrared receiver disposed on the opposite side of the predetermined path unless the beam of at least the predetermined minimum number of infrared pulses is blocked, the receiver being under the control of a second battery powered microcomputer having a continuously operating clock circuit of the same frequency as the clock circuit of the first battery powered microcomputer during each cycle of operation of the second battery powered

microcomputer, and the receiver being activated by the second battery powered microcomputer prior to transmission of the beam of at least the predetermined minimum number of infrared pulses;

25 counting each time that the receiver does not receive the beam of at least the predetermined minimum number of infrared pulses and storing each count in the second battery powered microcomputer;

stopping activation of the second battery powered microcomputer  
30 for a predetermined period of time after the receiver has not received the beam of at least the predetermined minimum number of infrared pulses for a predetermined period of time;

activating the second battery powered microcomputer for a  
35 predetermined period of time after the second battery powered microcomputer has been stopped for the predetermined period of time;

continuing to stop the second battery powered microcomputer after each of its activations for a predetermined period of time  
40 if the receiver has not received the beam of at least the predetermined minimum number of infrared pulses during each activation of the second battery powered microcomputer for the predetermined period of time;

and synchronizing the second battery powered microcomputer with  
45 the first battery powered microcomputer each time that the second battery powered microcomputer is to be activated

irrespective of whether the second battery powered microcomputer has been inactivated for one or more cycles of operation of the first battery powered microcomputer.

25. The method according to claim 24 comprising displaying a count of the number of objects by adding only a count of one to a count display irrespective of the number of consecutive cycles of operation of the second battery powered microcomputer that the  
5 infrared receiver does not receive the beam of at least the predetermined minimum number of infrared pulses.

26. The method according to claim 25 in which each predetermined period of time that the second battery powered microcomputer is stopped is a constant.

27. The method according to claim 26 in which the predetermined period of time that the receiver has not received the beam of at least the predetermined minimum number of infrared pulses is a constant.

28. The method according to claim 27 in which each predetermined period of time that the second battery powered microcomputer is stopped is a constant.

29. The method according to claim 28 in which the predetermined period of time that the receiver has not received the beam of at least the predetermined minimum number of infrared pulses is a constant.

30. The method according to claim 24 in which the predetermined period of time that the receiver has not received the beam of at

least the predetermined minimum number of infrared pulses is a constant.